DOCUMENT RESUME

ED 122 759 IR 003 368

AUTHOR Dakin, John
TITLE The Greater Metropolitan Region: A Context for Thinking about Planned Integrated Electronic Services as an Assistance toward Survival in a Population-Food-Energy Crisis.
PUB DATE 21 Apr 76
NOTE 18p.; Paper presented at the Telecommunications Policy Research Conference (Airlie, Virginia, April 21-24, 1976)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage
DESCRIPTORS Community Change; Computers; Delivery Systems; Electromechanical Technology; Energy Conservation; *Futures (of Society); Information Dissemination; Information Storage; *Metropolitan Areas; *Public Policy; Social Change; *Technological Advancement; *Telecommunication; Urban Areas; Urban Environment

ABSTRACT

The advances of technology can provide new solutions to urban problems of information dissemination, food production, and energy technology. Electronic capacity can be developed in an integrated way so that it makes a full contribution to solution of social problems, but it will be most effective if the state moves it forward. A larger metropolitan area unit with a radius of 300 km. is suggested as the operational area in which these problems are most easily addressed. (CH)

**********
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
**********

ED122759

FOURTH ANNUAL TELECOMMUNICATIONS POLICY
RESEARCH CONFERENCE

21-24 April, 1976 Airlie, Virginia

# The Greater Metropolitan Region:

# A Context for Thinking about Planned Integrated Electronic Services as an Assistance toward Survival in a Population-Food-Energy Crisis

John Dakin

Professor of Urban and Regional Planning

University of Toronto

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

22nd March, 1976



IR003368

FOURTH ANNUAL TELECOMMUNICATIONS POLICY
RESEARCH CONFERENCE

21-24 April, 1976 Airlie, Virginia

# The Greater Metropolitan Region

John Dakin

ABSTRACT

As metropolitan areas prepare to explode yet again, this time under impacts strongly reinforced by the computer and telecommunications technology, we need to think in larger units of space, new patterns of settlement, and new groupings of transactions. The development of the technology will shatter our present cultural, societal aims and our spatial distributions of populations even as it is applied. The greater metropolitan region, with a radius of 300 km is suggested as the operational area about which we should now think. Examples can already perhaps be identified: France, Britain, the Toronto area of the Great Lakes.

The key idea is that there are now considerable pressures pushing toward the need for this concept: societal changes in lifestyles, increase in wealth, problems connected with the future availability of energy, relatively high per capita costs for larger urban places and their threat of fiscal collapse, ecological difficulties, and the rapidly advancing computer and telecommunications technology. This technology has now reached a state of development where we can argue that it is capable of giving us new mixes in the solutions to some of these problems. If we accept this, then the question is: how do we develop our electronic capacity in an integrated way so that it makes the fullest possible contribution to solving the difficulties?

Science and technology push forward piecemeal. Entrepreneurial initiative pushes forward piecemeal. The public takes and exploits what advantages it can, also piecemeal. Only the state, in its various levels, is left to represent the larger public interest. The state, however, is itself a user and may need assistance from the public at large.

The technology implies equalization of access to information across the greater metro region. Our problems suggest some diffusion of our large massed populations. Can we help these two factors to work together by planning our telecommunications and computer services as an integrated system?



**********

1. INTRODUCTION

From whatever perspective one looks at the operations of the computer and telecommunications technology the need is for the integration of systems. With this there is no quarrel. The debate is concerning the various means of achieving it. I would submit that the problem of how to integrate is more complex than we at present perceive because we tend to think in certain limited modes and have no experience in handling the emerging factors.

Our contemporary modes most favoured include:

1. Technological means; e.g. digitization, microwave linking of head ends of CATV systems, making equipment intercompatible, entrepreneurial initiatives, etc.
2. Administrative means; e.g. requiring common data handling techniques, prescriptions by governmental agencies, licensing, etc.
3. Planning means; e.g. relating to development of electronic systems with that of other elements such as land use, transportation, medical and educational services, etc.

The technological means drives forward under pressure of science, technological innovation and entrepreneurial initiative. Characteristically, such means do not necessarily alone ensure overall societal integration since private enterprise coupled with the variations in equipments can lead to a limited integration within private systems. With this

CONTD/-

we are all familiar. The administrative agencies sometimes aim to get over such difficulties of large scale vested interests and to protect everybody against the more obvious confusions. The planning means attempt to relate elements comprehensively and claim to be concerned with something called the public interest. It is about this last - the planning means of moving toward integration of electronic systems - that I should like to offer a few tentative comments.

2. THE TECHNOLOGY IS A DISINTEGRATOR OF HUMAN SETTLEMENTS

Radio, T.V., CATV, disc and tape have geographically disintegrated entertainment. They are about to disintegrate education - decentralize it in the sense of the physical plant no longer being the single focus of the learner's physical presence. The computer and the improvements in telecommunications are disintegrators of our traditional geographic integration of work in our central business districts. As "work" becomes increasingly "knowledge-work" capable of being done anywhere there is access to a telephone line, geographic coming together for work becomes less necessary for even larger numbers of workers. This gives a new freedom of residential location which is already showing its effects around our old metropolitan built-up areas.

We have, therefore, a paradoxical situation in which the technology whose services we aim to integrate is the very means of a disintegration of the physical pattern of human settlement develcped after the second world war largely as a result

CONTD/-

of the automotive vehicle and the telephone. A new explosion of our metropolitan areas is beginning. Integration of the electronic services will therefore be made more difficult by greater scattering of populations over larger areas, difficulties of costs, jurisdictions, and lower physical densities of transactions. Our immediate solutions to presently perceived problems may therefore quickly convert themselves into tomorrow's problems.

We therefore need to look at things from as many approaches as possible. What suggestions can be offered?

3. GREATER METROPOLITAN REGIONS

I have suggested elsewhere (Dakin, 1973) that we should be wise to think in larger geographic areas than we are presently accustomed to for metropolitan regions. Even supposing there will be serious future energy limitations on physical movement the electronic technology obviously greatly loosens the previous binds of space and time. I therefore suggest we might usefully think of the unit of chief concern as the greater metropolitan region of 300 km radius. We are talking of an area the size of France. Telecommunications within such a greater region are manageable and weekly commuting is easily possible with a 4-day work-week. French and British thinking goes on at about this scale. The French actively pursue the idea of helping to relieve the excessive concentration of jobs and population in the Paris region by decentralizing computer capacity as a matter of national policy. The country is thought of as a

CONTD/-

whole, not as a collection of inter-related metropolitan nodes. The British concern themselves with such specifics of the greater region as the use of the electronic technology for sustaining and enhancing the efficiency of central government as more government departments move out of the London area.

Increasing percentages of metro populations spend increasing fractions of their time outside the metros. About 11% of the households of Ontario have cottages. In Sweden the cottage owners represent 15% of the total households (Jaakson, 1976). This will be 30% by 2000 A.D. The cottages rapidly move toward becoming second homes and the electronic technology makes it ever easier for knowledge-work to be carried out from the country location while adequately satisfying the centralized requirements of the work to be done.

Our response to the capacities of the technology for breaking the binds of space and time for sound, vision and computation will be the capitalizing of the ability to do think-work or knowledge-work without being bound by the old geographic ties of 24-hour commuting. We shall fan out as will be permitted by the 7-day commuting rhythm. Hence we arrive at the greater metropolitan region. It is over this region that the electronic services will have to be integrated. It is not sufficient to integrate only over the near-in, built-up metropolis and its immediate satellites. Some indication of this can be seen in the area of southern Ontario, where the 7-day rhythm of commuting already works up to 300 km, and 30%



CONTD/-

or so of the households may well own second houses by the turn of the century.

4. SYSTEMIC THINKING FOR INTEGRATION OF ELECTRONIC SERVICES

In trying to see the conditions in which integrated electronic services will be required to operate it seems essential to develop techniques for bringing together elements of very different kinds. We are not very good at this but might improve our ability by learning how to think in systems consisting of disparate but related parts.

For example, when thinking of new patterns of population - crucial to knowing how to provide the services - we might group the following and think about their inter-relationships over time:

1. Socioeconomic dislocations largely related to automation will reduce the workweek for the principal job. This may make the second job possible in a location relatively distant from the principal job location.
2. The "flextime" week in which the worker works what hours he likes gives new time-space mixes for location over the greater metro region.
3. The trend toward ever more workers being think-workers or knowledge-workers will accelerate. They become footloose for at least part of the week.
4. Wealth increase means new lifestyles.
5. Relatively higher energy costs will push us toward more telecommuting.

CONTD/-

6. The electronic services provide opportunities for new activities.
7. Transportation facilities and modes will change.
8. World population pressures will push up food costs in the cities relative to some other costs.
9. Increase in population will provide an increasing "surplus" of "workers".

5. SYSTEMS THINKING AND INTEGRATION OF ELECTRONIC SERVICES WILL MAKE NEW KINDS OF PLANNING POSSIBLE

Computer conferencing and computer modeling will be possible if we achieve a reasonable level of integrated servicing and an organization of our thinking along systemic lines. An important beginning of the realization of the need for integration of decisions is already appearing in North America. Executives of governments have had it brought home to them that efficiency within each department will no longer necessarily mean achieved viability for the whole. It is now seen, for example, that what the education department fails to do for the child may later have to be corrected by the health department, or the justice department: the ill-educated child is the sick or irresponsible adult.

The computer and telecommunications technology together with the necessary thinking modes can make possible an on-line planning technique in which the plan is a kind of running hypothesis in the form of a model or models which are constantly revised as new information becomes available.

CONTD/-

Harold Sackman (1972) is a strong proponent of this idea.

It seems clear that such a technique of planning would have great advantages. It would, however, require a certain minimum of electronic integration over the greater metro region. Government departments would have to be able to access each others' data and both use and contribute to each others' models. Further, a great deal of governmentally held data would have to be made available to public groups. Sackman stresses the public contribution to the planning process. He calls it POP - participatory online planning. This is in accord with the idea that the public, increasingly well informed through the electronic services, will demand more effective say in the decisions which affect them as individuals.

6. ONLINE PLANNING PARTICULARLY NECESSARY FOR CRISIS CONDITIONS

World crises due to rapidly increasing population, decline in the productivity rates in such foods as fish and grain, emerging areas of chronic starvation, ever rising inputs of energy necessary to extract new energy, etc. seem certain to increase in frequency, magnitudes and the severity of their repercussions. We are only just beginning to think about these things; our thinking is still very much oriented to immediately past conditions.

Such world crises will not pass over the greater metropolitan areas as being too small. Nor will wealth be a safeguard. Even the richest greater metropolitan regions will be directly affected by population pressures, food difficulties



CONTD/-

and energy restrictions arising from outside themselves and quite apart from their own internal difficulties stemming from the applications of the electronic technology, changing attitudes, new abilities, the shrinking of the globe, etc.

We may now be at the beginning of an urgent need to develop an integrated technology over greater metro regions in order to enable us to meet these pressures. Several items appear of great importance:

1. Good quality information must be available for making decisions accurately and quickly.
2. This information must be widely, quickly, conveniently accessible, and pollution-free.
3. Techniques are needed for reducing confusions of vision and intention. Different agencies see the "facts" differently and argue accordingly. Similarly, they do not clearly understand each others' intentions. Rapid and effective decision-making is likely to be impossible under such conditions. The technology could be effective in reducing delays of these kinds by keeping running information available to all concerned.
4. A high level of knowledge or information in the population as a whole is essential. This implies stimulating education by electronic means - teletuition.

7. FOOD AND THE ELECTRONIC TECHNOLOGY

We now have a fairly firm knowledge of how the life-support system of Spaceship Earth sustains us. We know that the bio-sphere is made up of ecosystems which are dynamic in nature



CONTD/-

and can be damaged in their capacities to continue producing food for man. The world population will be likely to increase by 50% by 2000 A.D. - to over 6 billion human beings. The pressure on existing and new food supplies will be extremely heavy. Krebs (1972, p. 621) thinks the rate of growth in protein production will have fallen behind the growth in the rate of demand by 1985. It will be necessary to give food production a much higher priority than at present. This will imply a great improvement in information about the detailed use of land for food production, weather conditions, distribution, storage, arrangements for emergencies. Coupled with this there may well be need to relate such an ongoing control and planning to the need to use energy as efficiently as possible. The reduction in unnecessary transportation will be required and it will be necessary to reduce the amount of energy used in fertilizer, etc. by increasing the component of information. Better availability of knowledge about soils, climate, and plant characteristics could produce crop planning using minimal energy.

All this must be done within the need to maintain the world's ecosystems at levels of steady states which will produce as much food as possible. Large areas of the world are already converted to a man-oriented, man-conditioned state. They are modified from their "natural" condition to an artificial state. This artificial state must be dependent, and increasingly so, on information for its maintenance.

CONTD/-

We may therefore envisage sophisticated information services connected with food production appearing at the greater metro region level. The electronic technology is already playing an important role in providing information about weather, crop conditions, providing mapping of eco-systems, etc. A weakness is the difficulty of diffusing CATV services extensively in areas of relatively sparse population. Although CATV originally appeared as a service to county areas it has since found a richer market in the metropolitan areas. Attention now needs to be directed to getting better CATV services in rural areas.

8. ENERGY AND THE ELECTRONIC TECHNOLOGY

It takes even more energy to get the next additional increment of energy. The new net energy produced requires always greater expenditure of energy to achieve it. Yet an enlarged world population will require vastly enlarged quantities of energy. The population and the energy curves accelerate rapidly toward a mutually produced bad situation. Working together these two might bring civilized life to an end.

We have to address ourselves to the conservation of energy by all possible means. One very important means is the intensified use of the telecommunications and computer technology by:

1. Using every opportunity to convert the transaction to an electronic mode instead of a mode requiring energy-using physical movement.

CONTD/-

2. Maximizing automation in physical goods production so that physical movement of workers is kept to very modest figures.
3. Using the technology to encourage the emergence of a set of social values which emphasizes mental activity and possessions and de-emphasizes physical goods and energy consuming leisure activities.
4. Using the technology to make information widely accessible, through specifically designed services such as electronic processing centres, easy access to equipment, instruction in how to use both equipment and information, etc.
5. The further development of control systems and societal arrangements for making the use of energy more efficient as an ongoing process (e.g. use of slack periods in electrical energy supply).
6. Applying information to achieve recycling of nutrients and other materials.

Characteristically we have to find out how to use the small quantities of energy required to handle information in ways which will reduce our uses of large quantities of energy. We have to think out how this can be done in detail.

It is also clear that the key systemic mix is population-food-energy. These are the areas of threat. The electronic technology by allowing new ways of accomplishing existing

CONTD/-

transactions and making possible new ones potentially offers a major contribution to dealing with this triple pressure. It does so by offering new patterns of human settlement, new levels of knowledge application in manipulating ecosystems, and new alternative mixes for the uses of energy. These have to be thought about together.

9. THE SCOPE OF THINKING HAS TO BE GLOBAL

No greater metropolitan region stands alone. It exists as a particular part of the biosphere, with which it has dynamic relationships. We need, therefore, some conceptualization of an order of entities. At present it may be useful to identify the greater metropolitan region, the megalopolis, the extensive low density zone, and the globe itself. These appear to be identifiable as a matter of observation. Their relationships, however, are not so easy to identify. Sometimes a greater metro region coincides with the nation state; sometimes not. It seems clear that the extensive low density zones feed the megalopolitan areas such as the eastern seaboard metros of the U.S.A., the European industrial complex, greater Tokyo, etc. Also it is clear these are the areas where knowledge is generated and it is between them that the most intense transactional traffic flows around the world. Further, there must be some input-output balance between them and the rest. This may imminently be changed, however, by the burst of new world population.

Whatever we may think of such speculations it seems clear

CONTD/-

that we must see our greater metro regions in some such context and that these regions draw ever closer to each other and to the total global context itself. Our policies for the electronic services in the greater metro regions must therefore be such that this increasing closeness and interdependence is realized.

10. CONCLUSION

In this extremely complex situation of new pressures, new mixes of factors and new technologies where should we place our chief emphasis? Any answer to this question cannot at present escape a large component of personal individual evaluation. With full awareness of the risks involved I suggest the following:

1. Integration of equipment and services at greater metropolitan regional level (200 km radius).
2. Equal opportunity for contributing and accessing information to everyone in the region irrespective of density of population.
3. Tariffs for services that do not penalize some areas or favour others.
4. Vigorous promotion of the development and use of the services so that populations are ready to adopt the new ways of transacting as the pressures to do so are experienced.
5. Close attention to using information in preference to energy.

CONTD/-

6. Close attention to online regional management, using all the capacities of the technology, for encouraging ecosystems stability compatible with maximum food production.
7. Very close attention to the apparent paradox that the application of the technology to our present cultural-social condition to render things more efficient is most probably so powerful as to explode the cultural-social condition into a dangerous chaos.
8. Very close attention to the apparent paradox that the electronic technology, together with population pressures and food-energy problems, forces us toward greater interdependence between greater metropolitan regions and simultaneously new patterns of decentralization. The familiar mixes of centralization-decentralization no longer hold.

The elements of our present condition will continue to be with us, added to by new ones. But that condition will be characterized by new mixes of the elements. The development of the electronic technology is one of the major ways in which we shall have to learn how to make the new mixes workable.

References

Brown, L.R. 1975. "The World Food Prospect." Science, 190 (No. 4219), 1053-1059.



CONTD/-

Dakin, A.J. 1973. Telecommunications and the Planning of Greater Metropolitan Regions. Ministry of Communications Canada, Ottawa.

Jaakson, R. 1975. "National Physical Planning in Sweden." Plan Canada, 15 (No.3), 142-155.

Krebs, C.J. 1972. Ecology: The Experimental Analysis of Distribution and Abundance. Harper and Row, New York.

Kupperman, R.H. et al. 1972. "Crisis Management: Some Opportunities." Science, 187 (No. 4175), 404-410.

The New Alchemy Institute. 1976. The Journal of the New Alchemists. Woods Hole, Massachusetts.

Sackman, H. and R.L. Citrenbaum, eds. 1972. Online Planning: Towards Creative Problem-Solving. Prentice-Hall, Englewood Cliffs, N.J.